

FIG. 2A

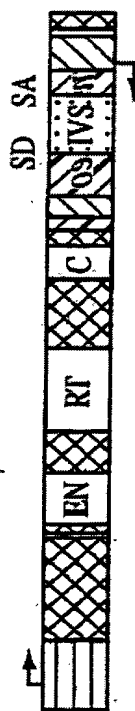


FIG. 2B-1

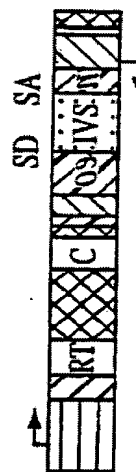


FIG. 2B-2

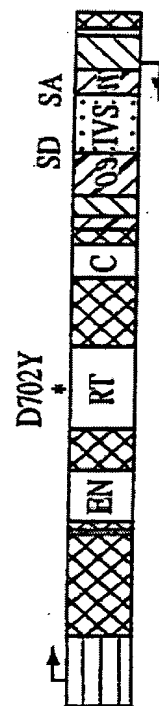


FIG. 2B-3

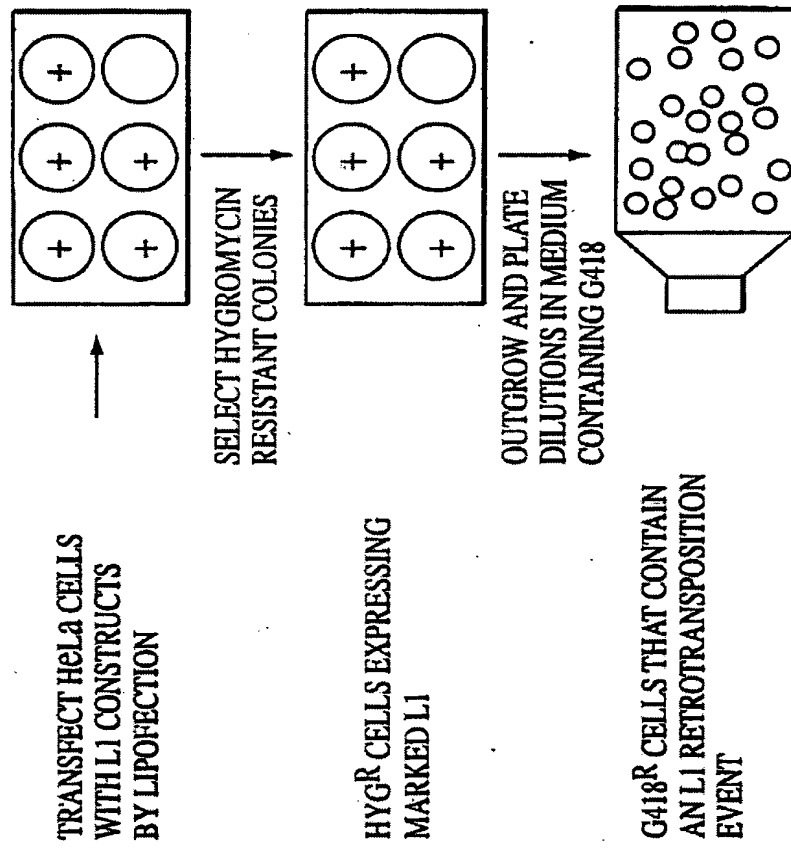


FIG. 3A

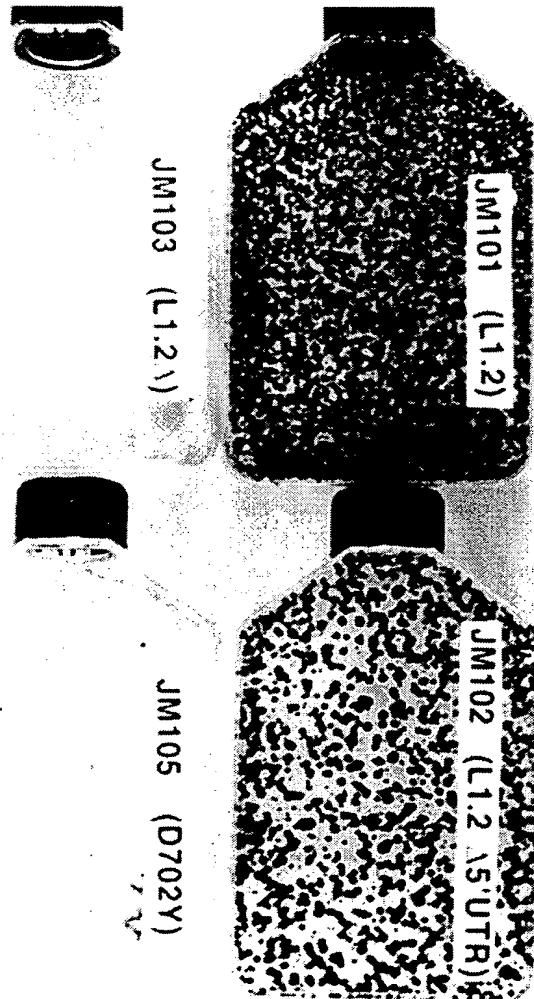


FIG. 3B

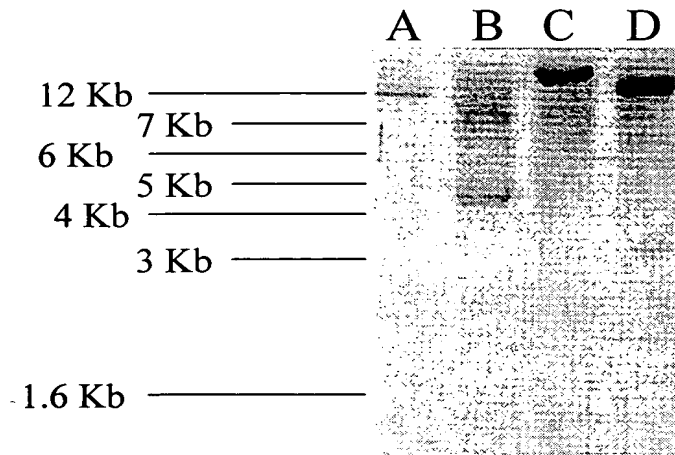


FIG. 4A

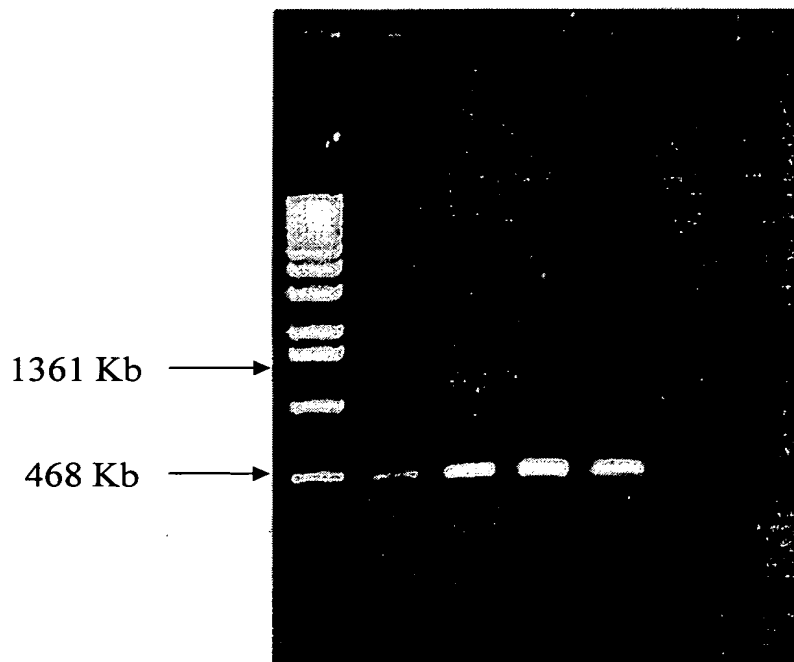


FIG. 4B-3

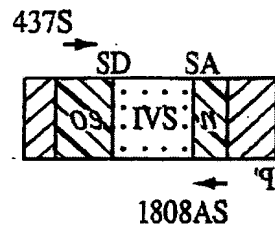


FIG. 4B-1

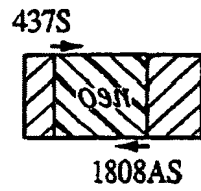


FIG. 4B-2

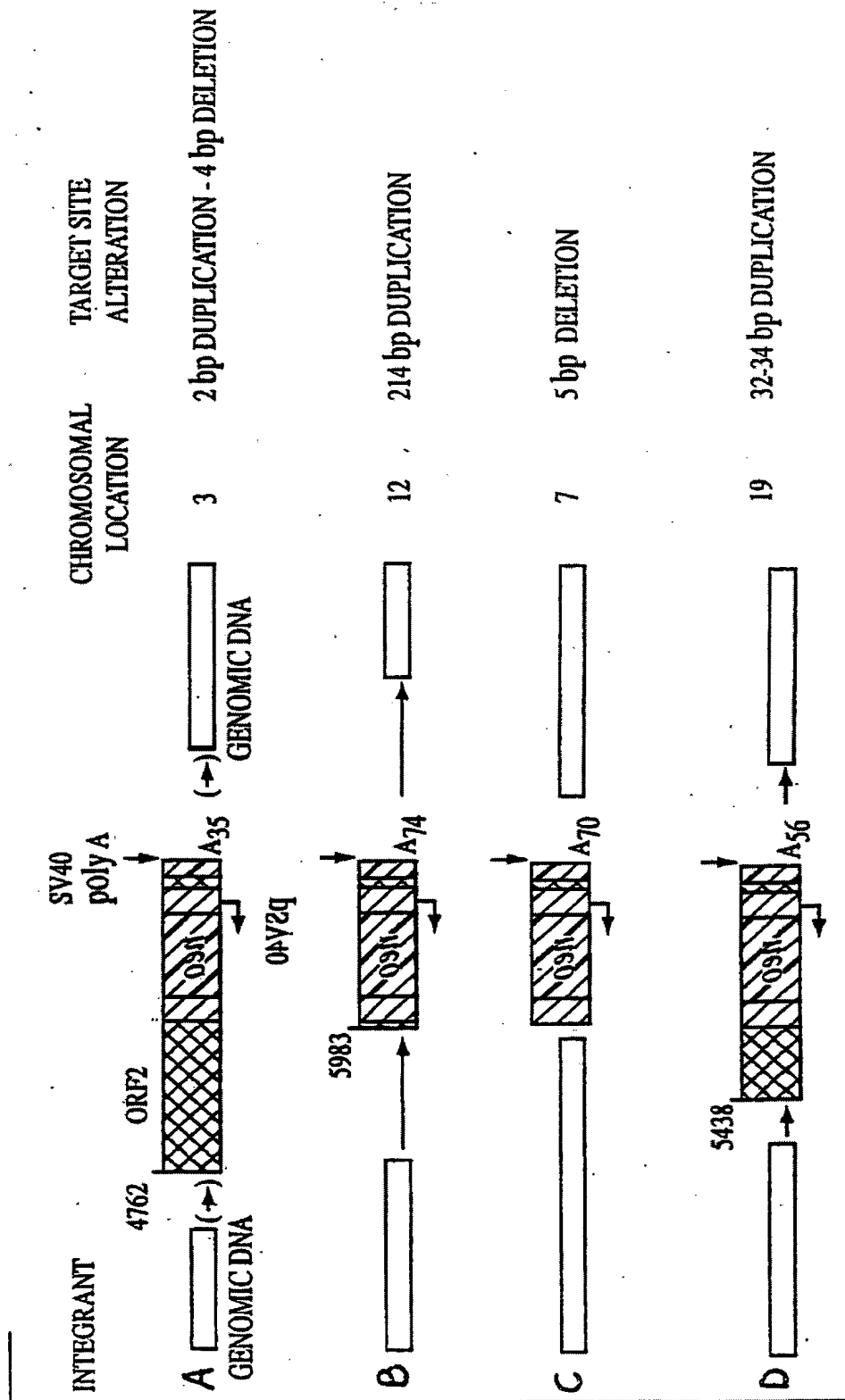
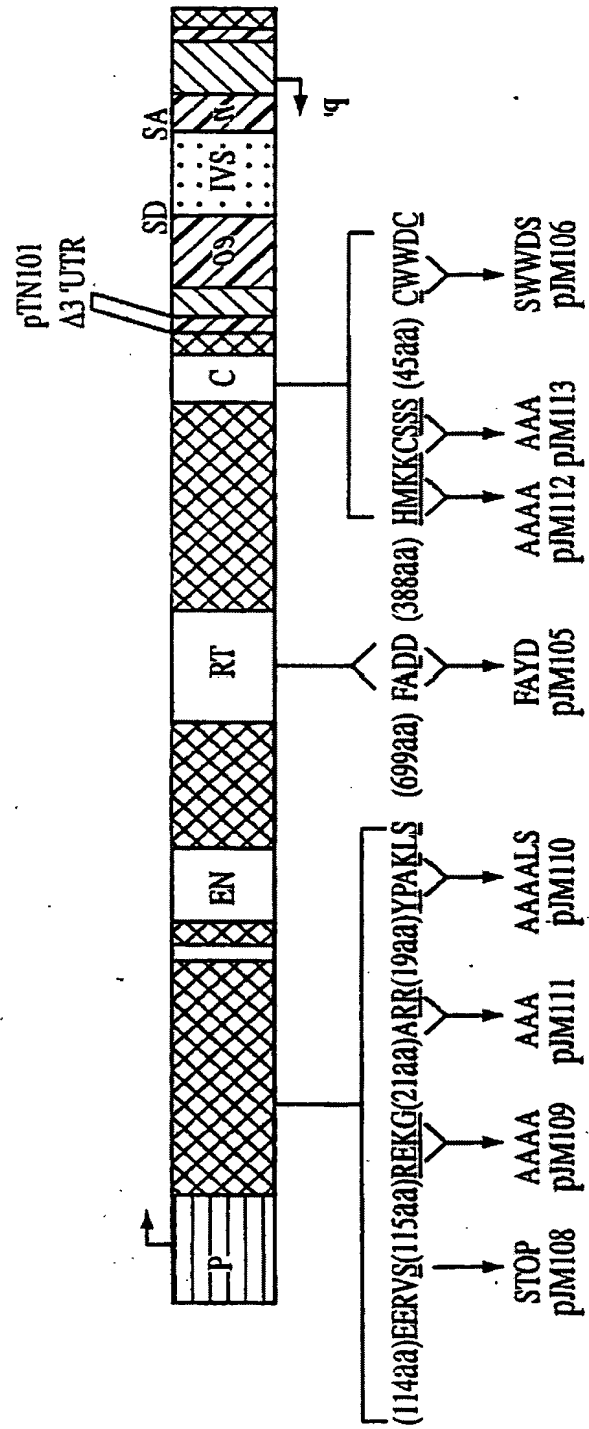


FIG. 5



ORF1 MUTANTS

FIG. 6

ORF2 MUTANTS

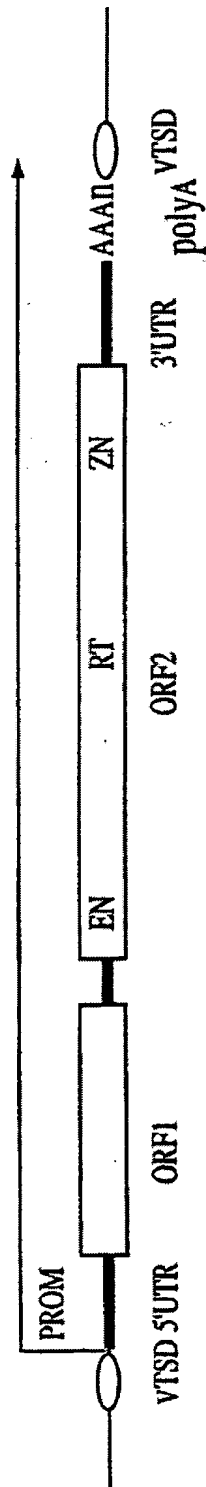


FIG. 7A

TAD	.....MVQLKILYWNVGKS (13)	YDIVAIQEPG (22)	KGRAVIYVNK (25)	PTTVYSIYSPILT
L1Tc (35)	DIEQNPGPIAVLQMNVSCL (12)	ADIIAIQETW (23)	GGGAVLVVRK (31)	DLIVASAYMRPPP
R1Bm	..MDIRPRLPIGQINLGA (15)	LDIVLVQEQY (13)	KAGVYIRNRV (22)	DLYMVSAYFQYSD
FDm	....IMATLFIATWNANGV (15)	IDVMLLSETH (23)	HGGTAILIRN (32)	LLTLAAVYCPPRF
GDm	....MQISLNIVFWNANGL (15)	IDILLVSESH (24)	RGGAAMLIKS (27)	DITVGAVYPRHEF
JOCK	...MTQPTLKIGLWNARGL (15)	IDVMLTTETH (24)	RGSAVILIKS (27)	TVTVAAYVLPPE
IDm	.....MSLTVIQWNLKG (15)	PHIISLQETH (23)	EGGVRILVHK (24)	KLNIESTYISPTK
L1Hs	.MTGSNSHITILTININGL (17)	PSVCCIQETH (25)	KAGVAIIVSD (27)	ELTIILNIYAPNTG
Tx1	.....MALSI STLNTNGC (17)	YSVSFLQETH (25)	SCGVVTLFSD (27)	TYNLMNVYAPTGT
Cin4 (10)	GYPMNTNCCIFSWNVRL (17)	ATSVCLQETK (27)	GASGGILIAAC (29)	VWDLTAVYGPQQE
Dre (04)	NKTIKNTIRIGVWNVQGS (17)	LDAALLTETN (27)	QGVSQIIINT (23)	QIKCTTIYAPAKS
APHs (53)	SPSGKPATLKICSWNVDGL (16)	PDILCLQETK (28)	GYSVGVLISR (27)	SFVLVTAYVPNAG
Retrotransposons	12-17	13-27	22-31	6-23
AP endonucleases	15-17	23-28	27	27-28
DNase I	.....MLKIAAFNIRTF (20)	YDIVLIQEV		(120)
L1Hs mutants	↓	↓		
	N14A	E43A		

FIG. 7B-1

FIG. 7B-2

(23)	NLVAUGDLNLHHPDWD	(29)	GE.PTRLGNATRGERTIDHAWLS	(16)	GSDHCPQEIWVQV
(17)	PLLLCGDFNMHHPQWE	(25)	GE.ITTARGTRER...SCIDLTSWK	(13)	LSDHVVLFTTLHQ
(19)	RVVICADTNAHSPPLWH	(35)	GHLPTFESTANGE...SYVDVTLST	(14)	SSDHRLLIVFGVGG
(16)	HFAAGDYNNAKHHTHWG	(26)	PGSPTYWPSDLN.KLPDLIDFAVTK	(15)	SSDHSPLVLIHLRR
(16)	RFAAGDENAKHSHWWG	(24)	TGEPHWPSPDS.KQPDLLDIAICK	(15)	VSDHSAVNLLNI
(16)	KFAAGDYNNAKHAWWG	(24)	TGEPTFYSYNPL.LTPSALDEFFITC	(15)	SSDHLPILAVALHA
(16)	PSLITGDFENGWHPSWG	(24)	DKSPHFSH...NTYSHIDLTLCS	(16)	GSDHFPITITLFP
(18)	HTLIMGDFNTPLSTLD	(34)	TE.YTF..FSAPHHTYSKIDHIVGS	(16)	LSHSAIKLELRI
(21)	ALIIGGDFNYTLDDARD	(34)	VA.FTYVRVRDGHVSQSRIDRIYIS	(16)	FSDHNCVSIIRMSI
(19)	EWLILGDFNMIRRVGE	(30)	KK.FT.WSNEQDDPTMSRIDRLMAT	(18)	TSDHSPLLMQGHS
(17)	SDIITGDFENVDCSDN	(19)	NG.ITFPR.....NKSTIDRVFVS	(17)	KSDHNMVVIIEIKI
(27)	PLVLCGDLNVAHEEID	(45)	TF.WTYMMNARSKNVGWRLDYFLLS	(17)	GSDHCPITLYLAL

21-35

13-18

44-50

17-21

DVMLMGDFENADCSYVT (31)CAYDRIVVA (31) ISDHYPVEVTLT

↓
D145A

↓
D205G

↓
H230A

FIG. 7B-2

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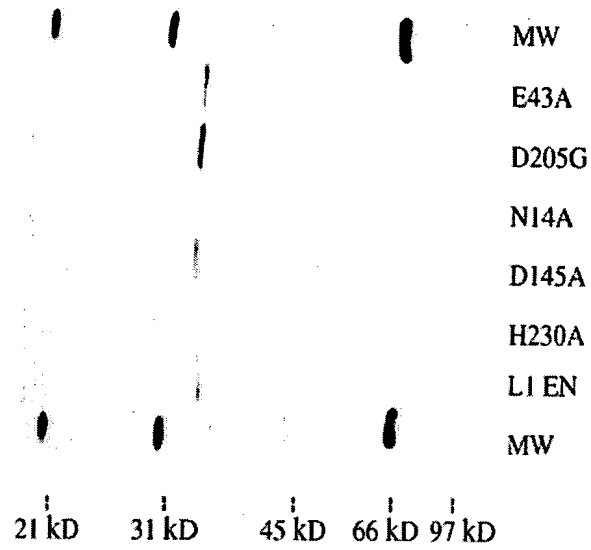


FIG. 8A

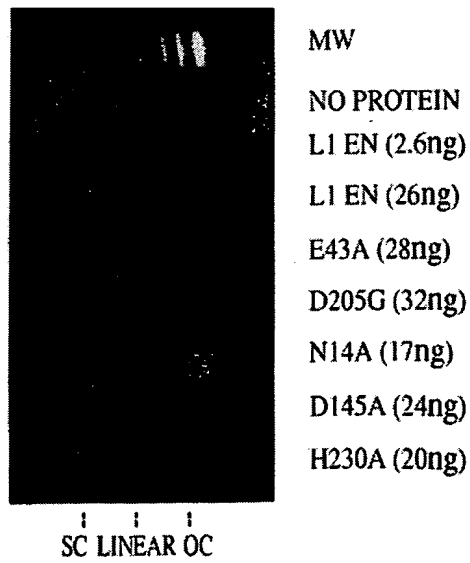


FIG. 8B

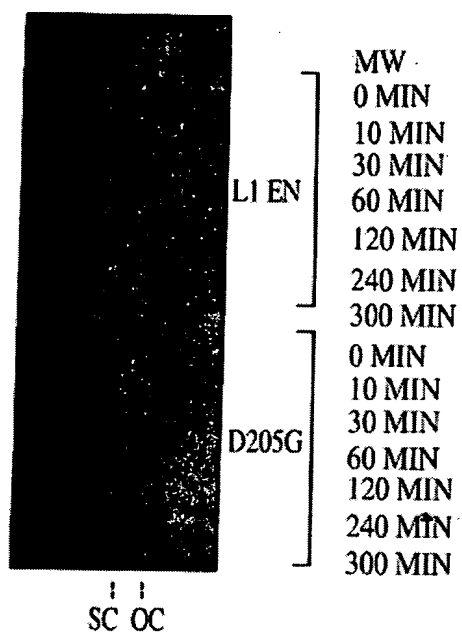


FIG. 8C

LI EN	-	+	+	+	-	+	+	+
↓ Δ								
T4 DNA LIGASE	-	-	+	+	-	-	+	+
↓ Δ								
LI EN	-	-	-	+	-	-	-	+

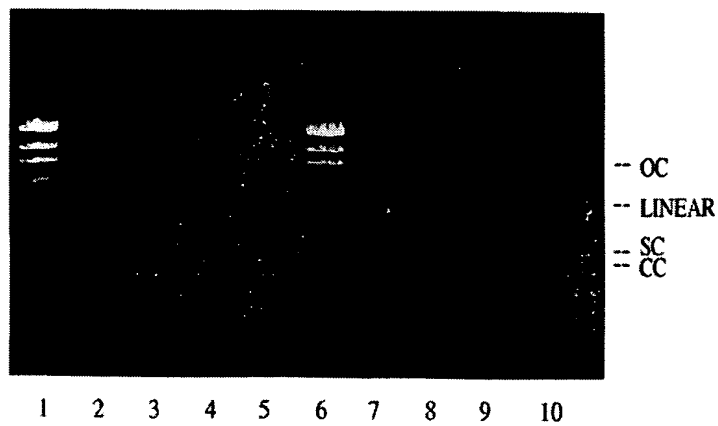


FIG. 9

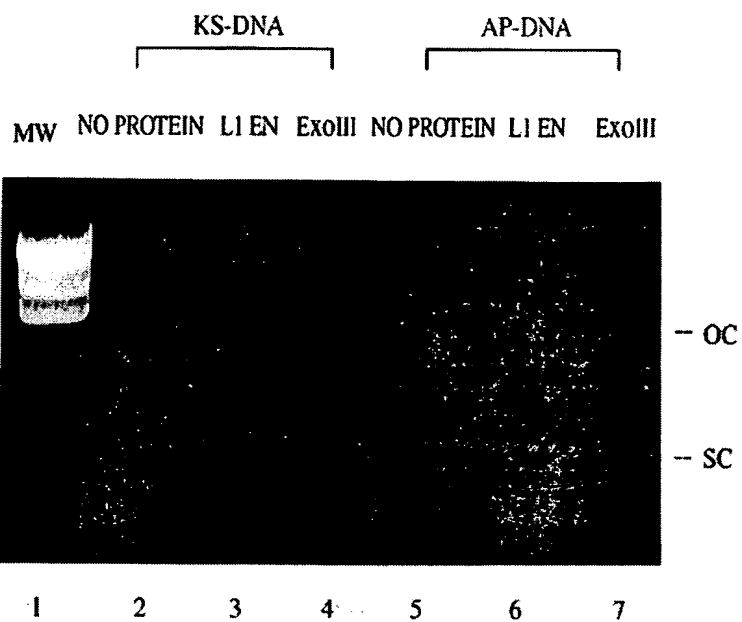


FIG. 10

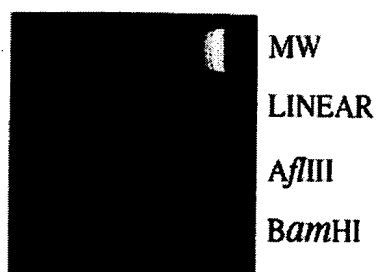


FIG. 11A

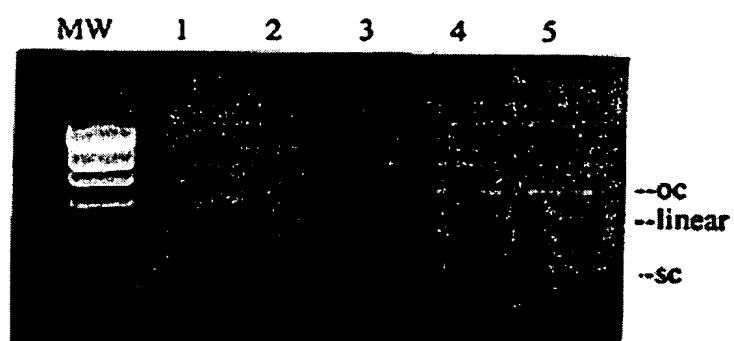


FIG. 11B

FIG. 11C-1

GATC 1 2 3 4 5

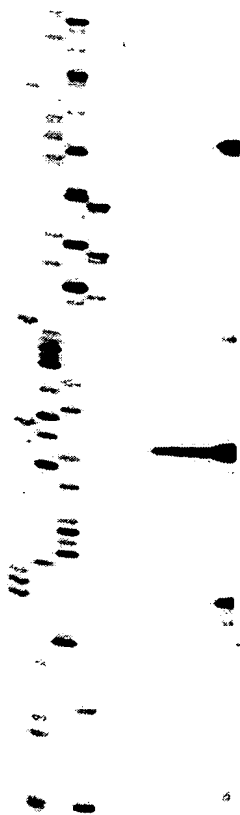


FIG. 11C-2

GATC 1 2 3 4 5

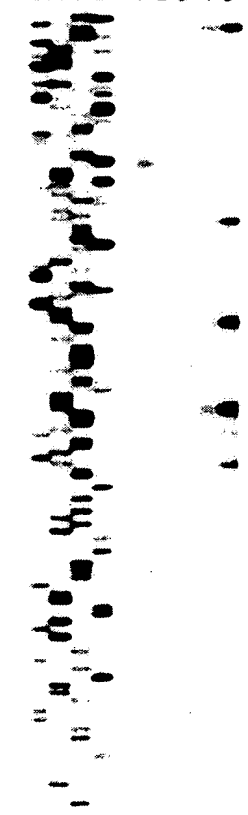
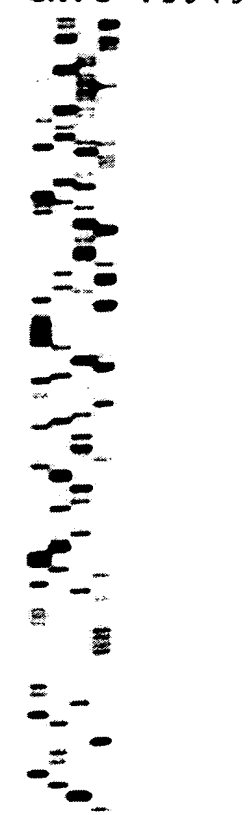


FIG. 11C-3

GATC 1 2 3 4 5



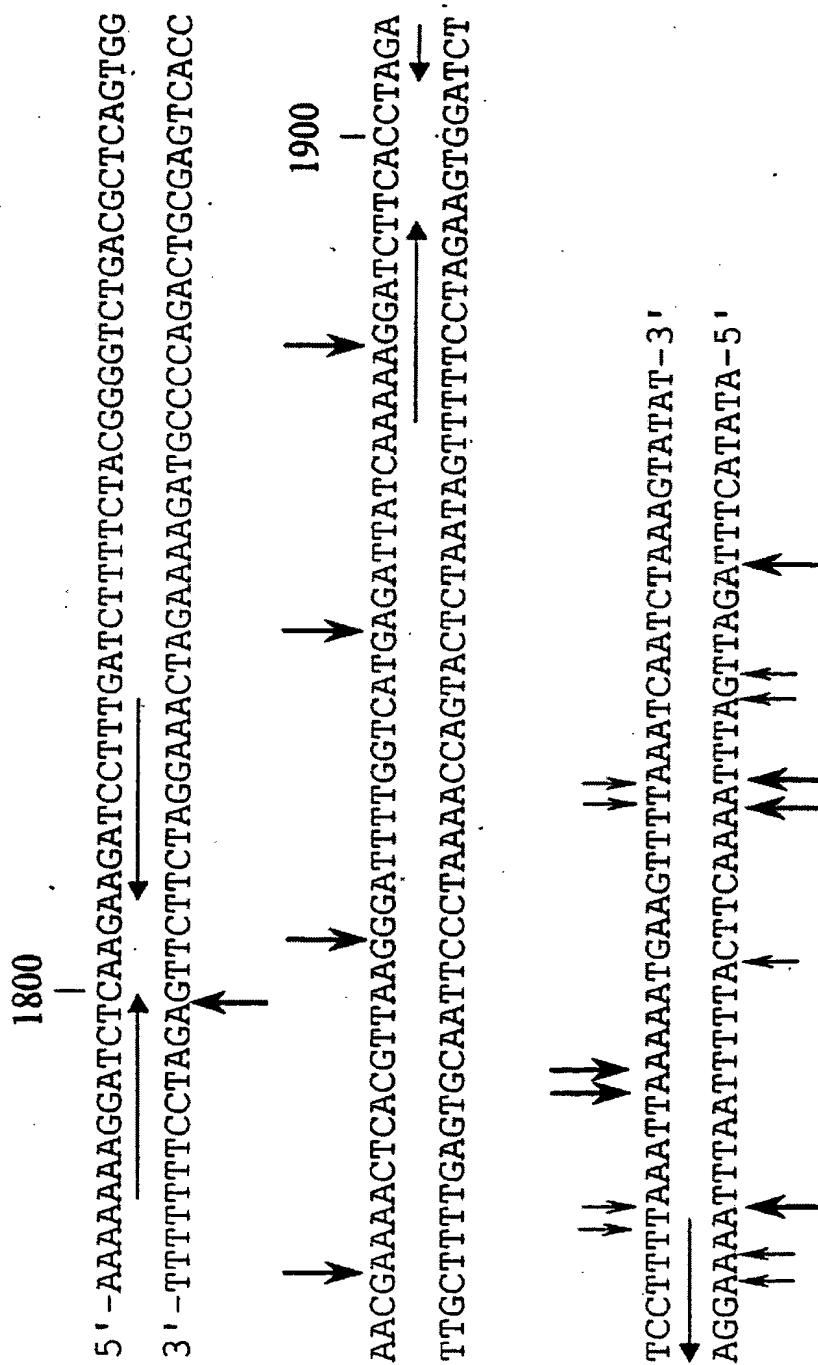
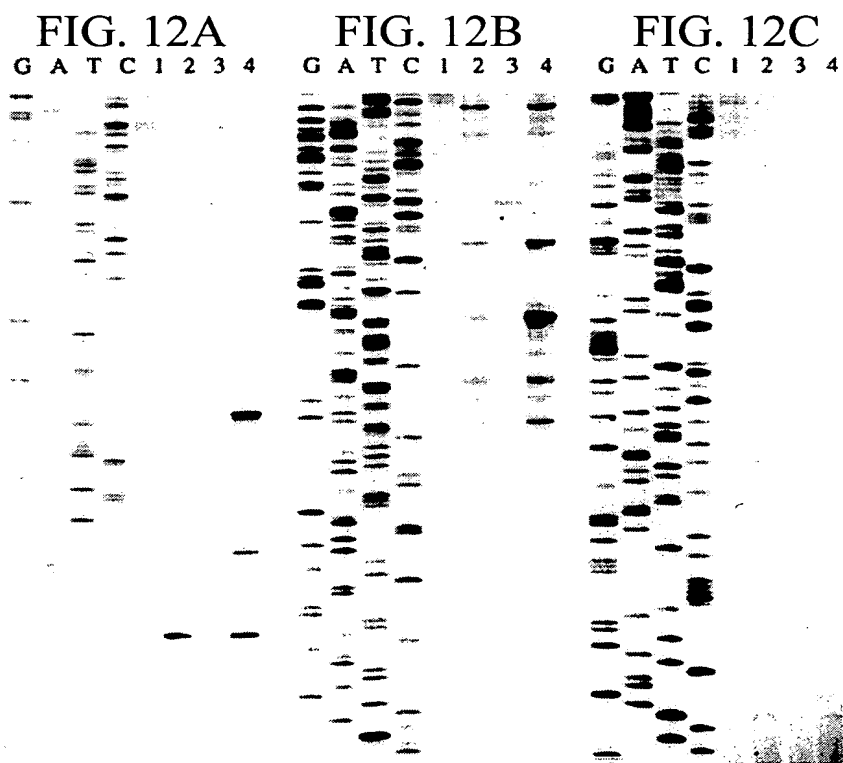


FIG. 11D



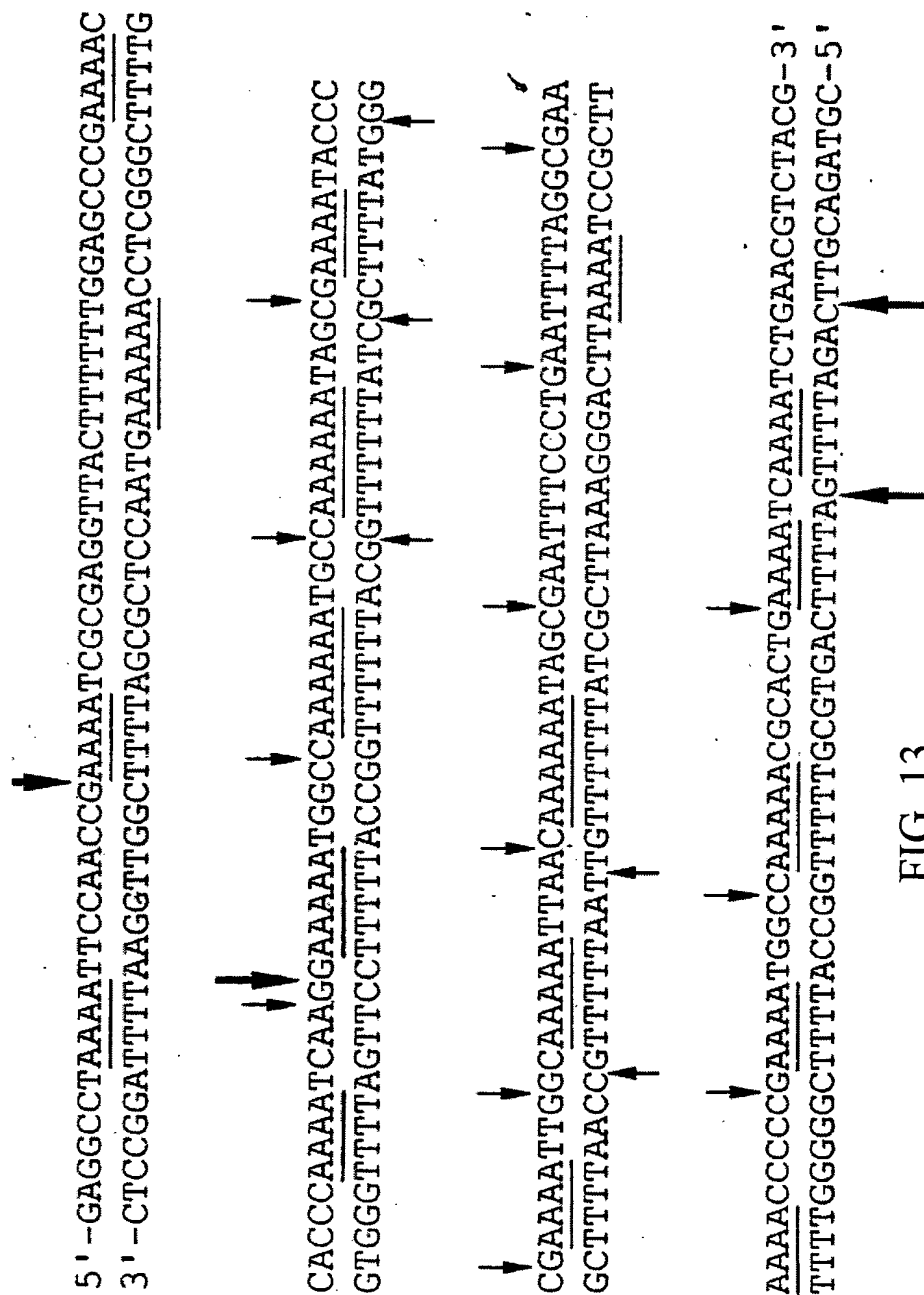


FIG. 13

CTTTTaaaaaattgttt
GAAAAAtttttaacaaa

CTTTTaaaaaattgttt
GAAAAA↑ttttaacaaa

CTTTTaaaaaattgttt
GAAAAA
aacaaa

L1 ORF1 ORF2 XXXXAAAAAAAAAAAAAAAAAAAA

HO-tttttttt

FIG. 14A

AGGATCTcaagaag
TCCTAGAgttcttc
↑
AAGTTTaaatcaa
TTCAAAAtttagtt
↑
GAAGTTTtaaataca
CTTCAAAatttagt
↑
TCCTTTTaaattaa
AGGAAAAtttaatt
↑
AGATAATcaaaaaag
TCTATTAgttttttc
↑
TCAATCTaaagtat
AGTTAGAtttcata
↑

FIG. 14B-2

ATAATCTcatgacc
TATTAGAgtactgg
↑
CATTTTtaatttaa
GTAAAAAtttaatt
↑
TCATTTTtaattta
AGTAAAAatttaaat
↑
AAAATCCcttaacg
TTTTAGGgaattgc
↑
AAGATCCtttttga
TTCTAGGaaaaact
↑
GAGTTTtcggtcca
CTCAAAAgcaagggt
↑

FIG. 14B-1

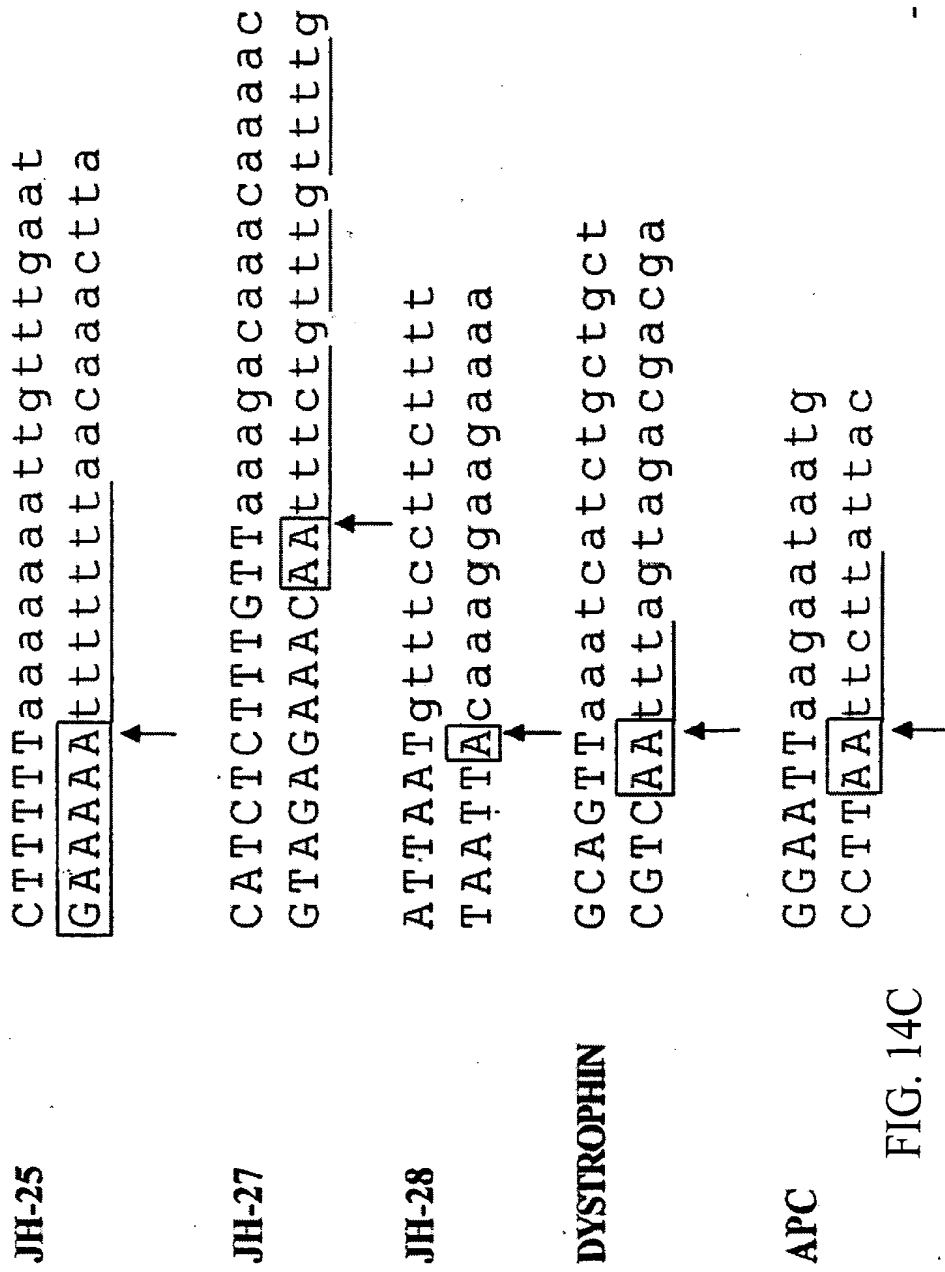


FIG. 14C

FIG. 14D

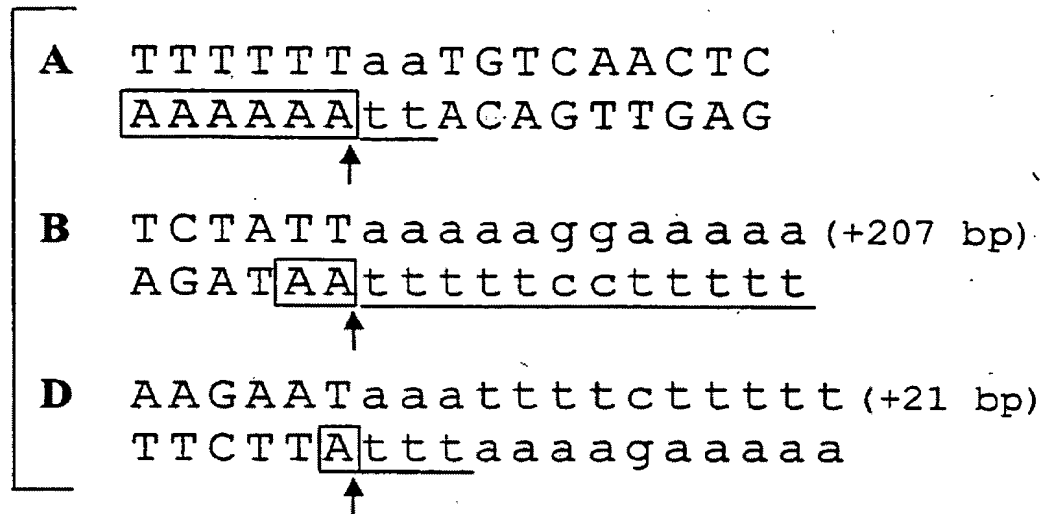
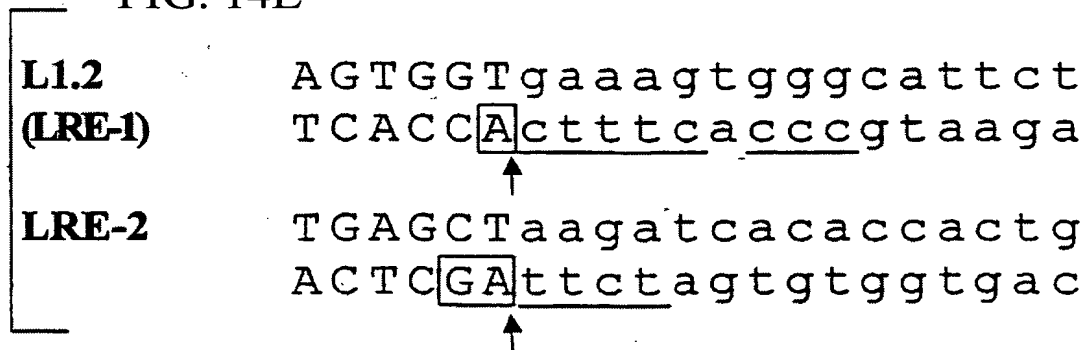


FIG. 14E



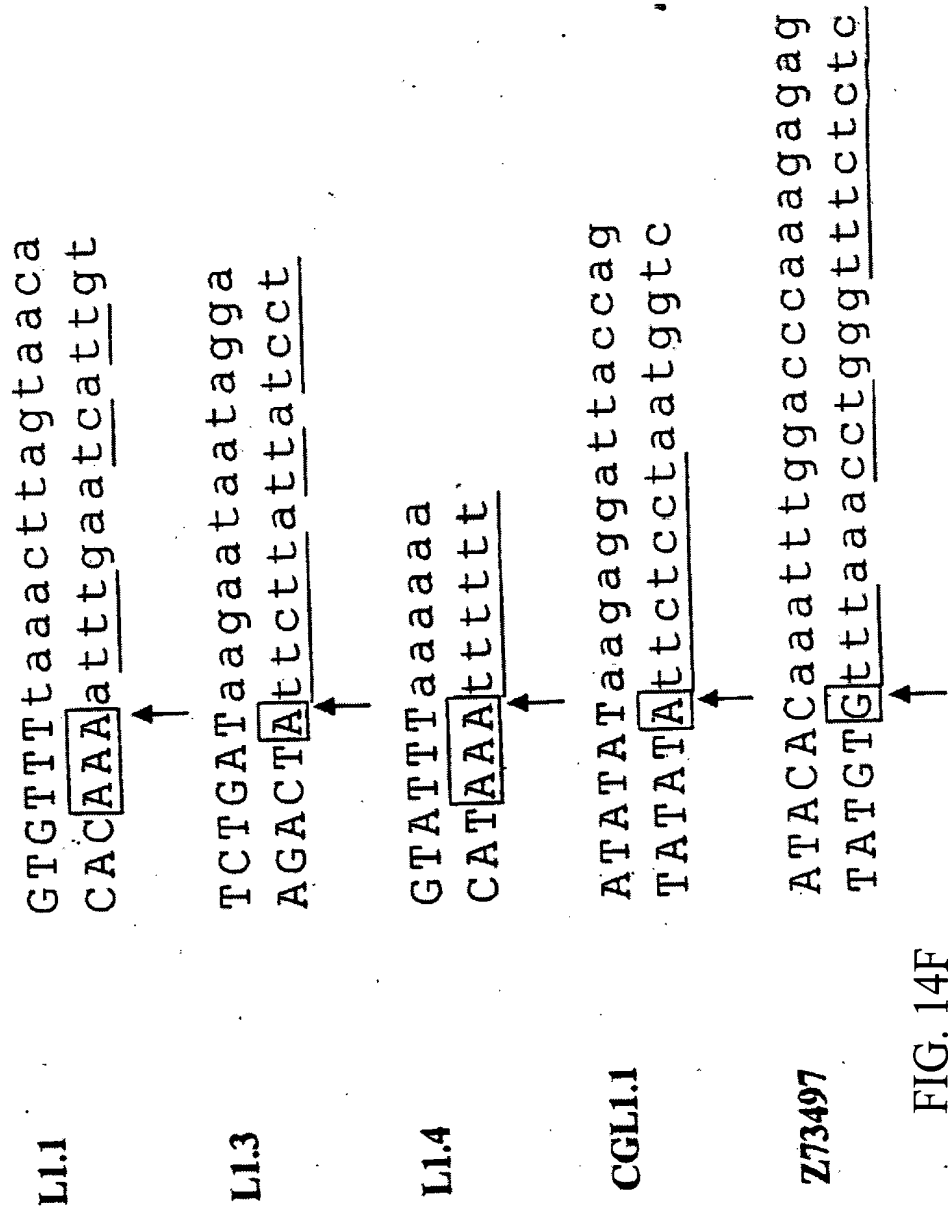


FIG. 14F

FIG. 14G

L05637 TTTTTTaaaaaa
AAAAAAtttttt
↑

Z70758 TGACTTagaagtccatgaatcca
ACTGAAttcttcaggtaggt
↑

Z69721 TGCCTTaagaagggtcaaaggcag
ACGGAAttcttcagtttccgtc
↑

Z69648 AAAAACaaaaaa
TTTTTGtttttt
↑

Z68163 AAAATTaaaaattgtgat
TTTTAAttttttaactcta
↑

Z68339 GGGGTTaagattgaagaatg
CCCCAAttctaacttcttac
↑

Z70042 GGATTCaaaaggagttattgat
CCTAAGtttttcctcaataacta
↑

Z68746 TCTTATAaaaagtaaact
AGAAATAttttttcatttga
↑

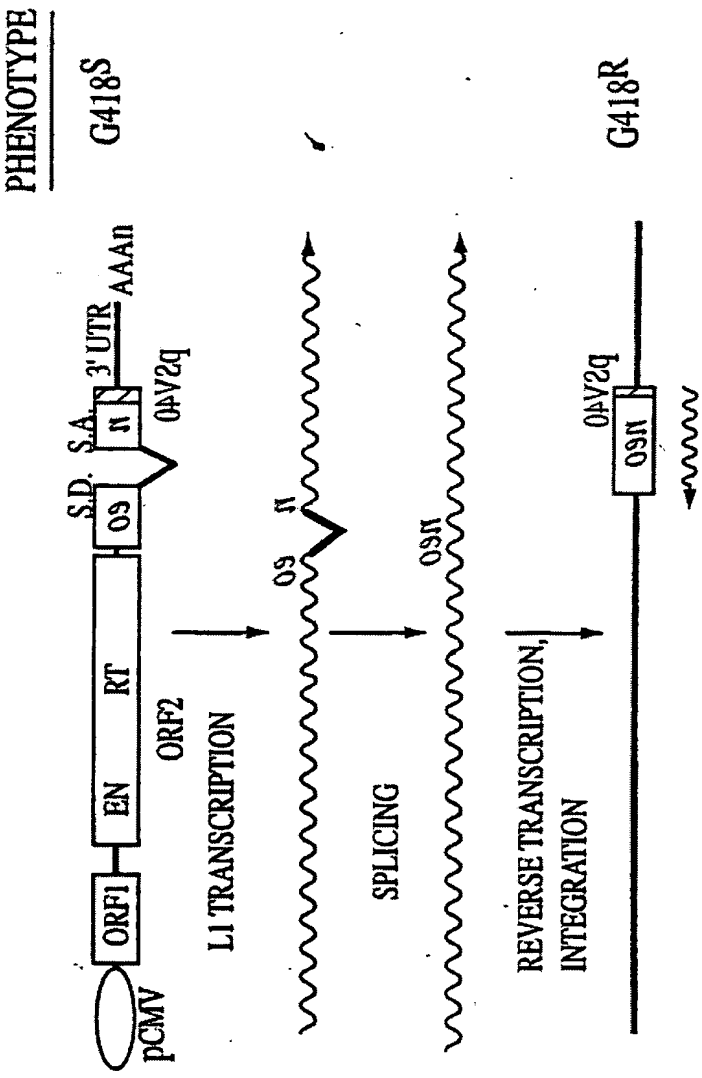


FIG. 15A

CONSTRUCT		TRANSPOSITION FREQUENCY (10^{-6} cell $^{-1}$)
WILDTYPE L1		335
D703Y	(RT $^{-}$)	0.5
N14	(EN $^{-}$)	3.4
D145A	(EN $^{-}$)	1.0
D205G	(EN $^{-}$)	0.7
H230A	(EN $^{-}$)	1.3

FIG. 15B

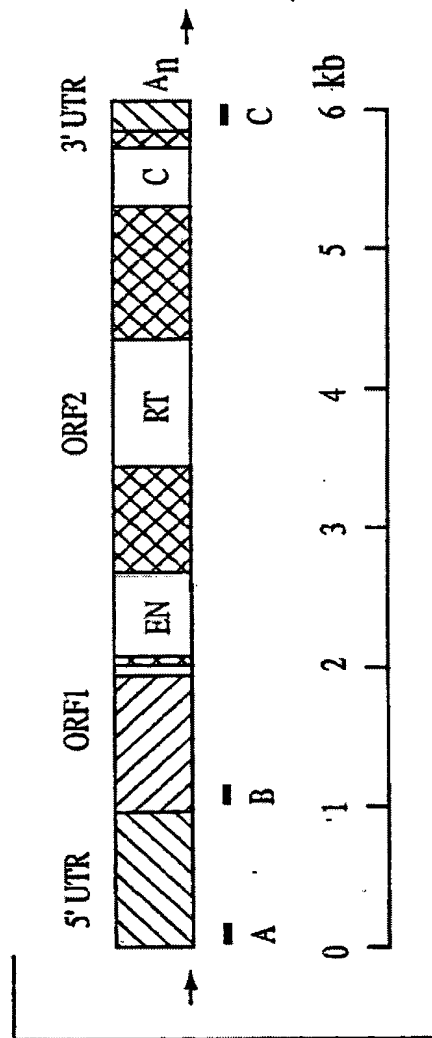


FIG. 16

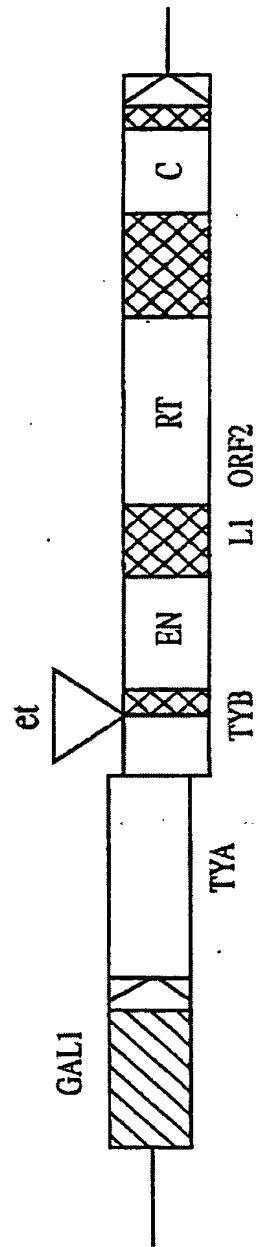


FIG. 17A

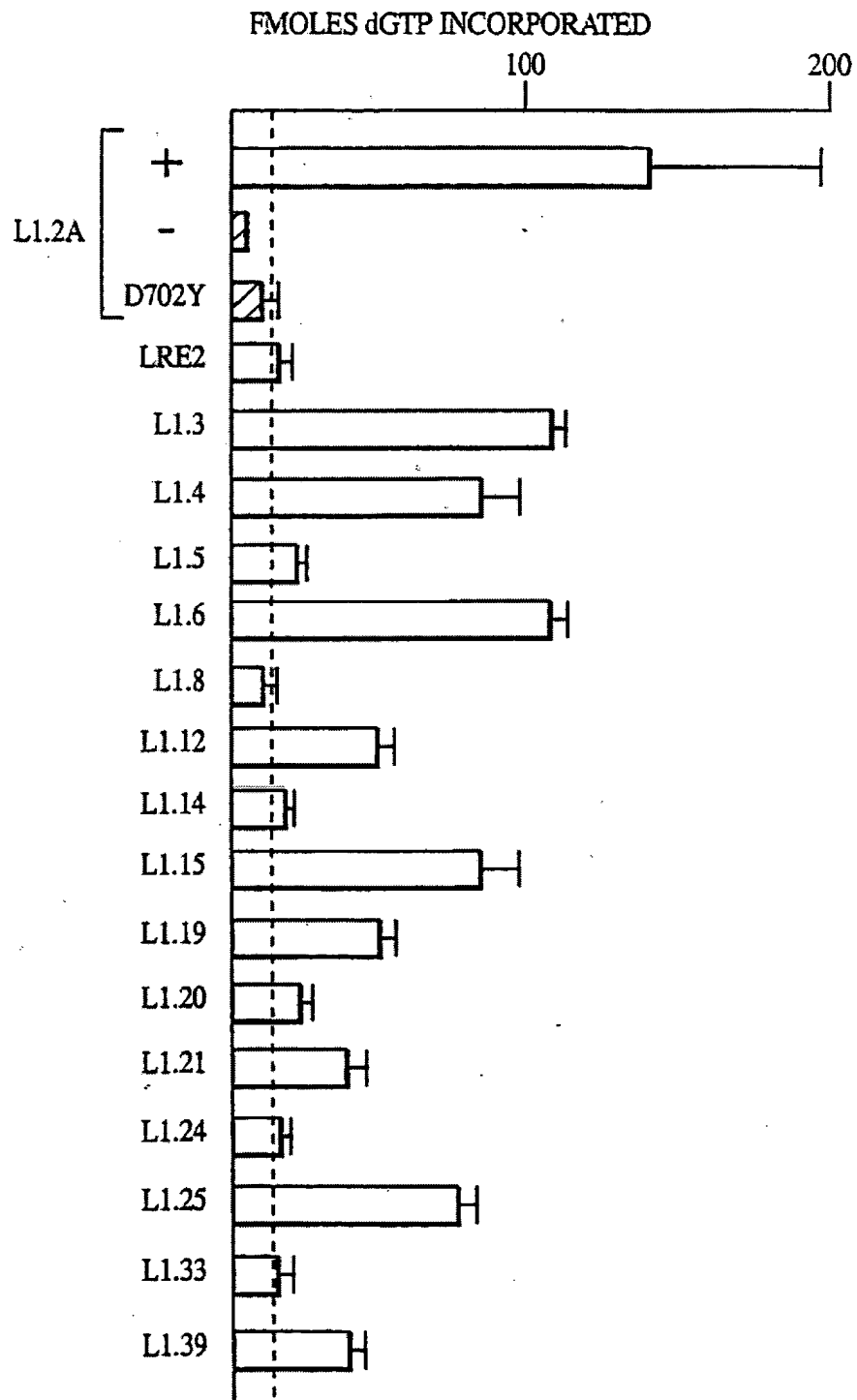


FIG. 17B

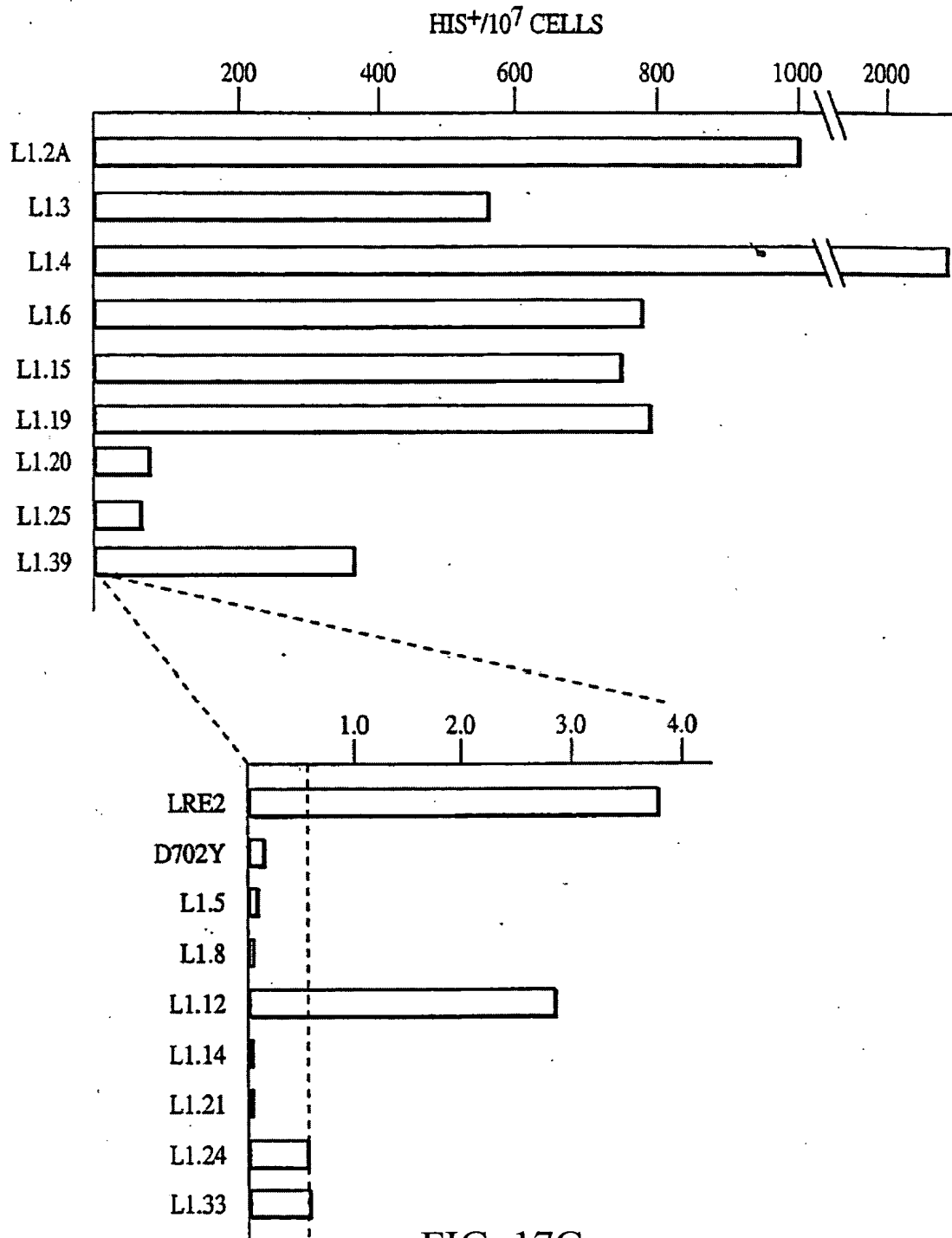


FIG. 17C

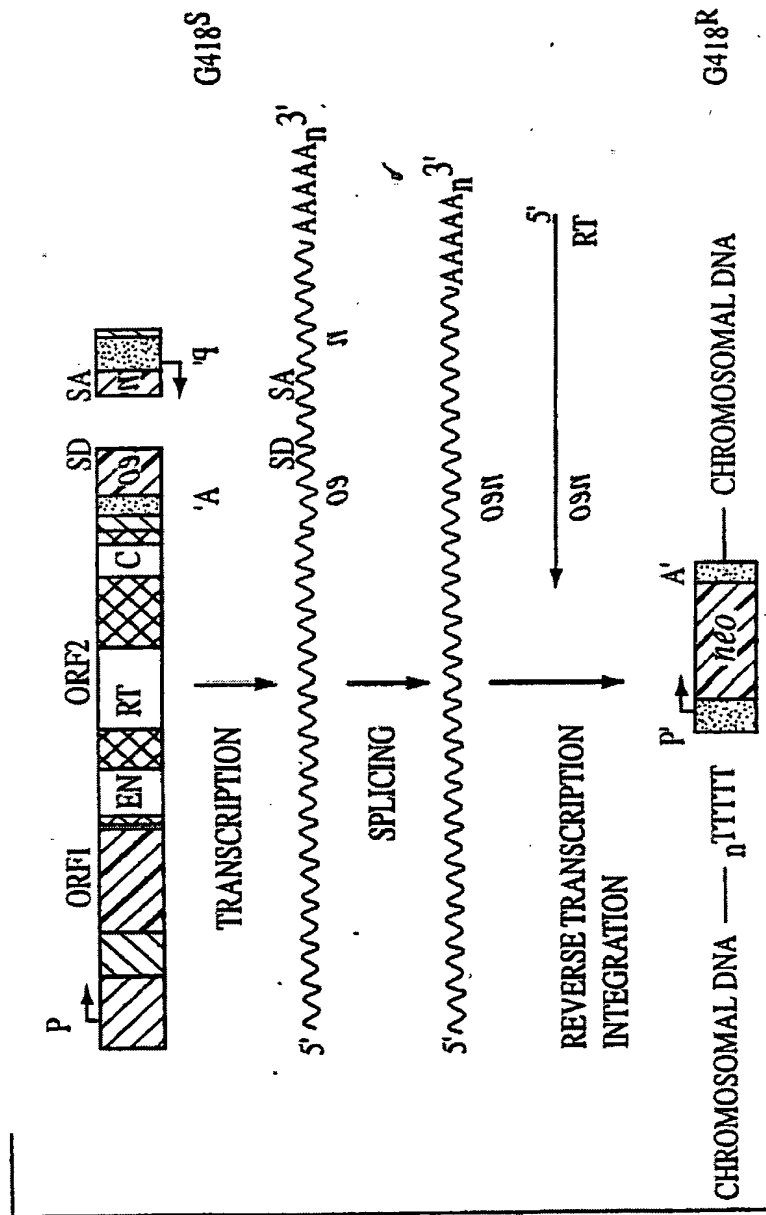


FIG. 18A

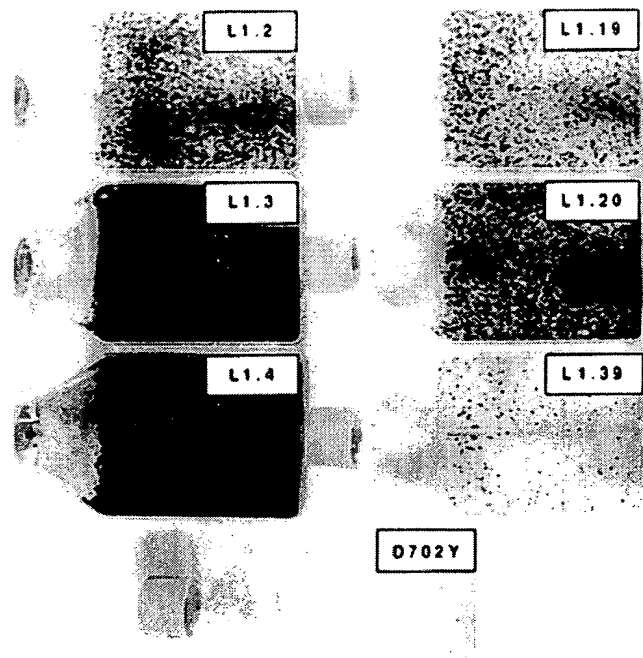


FIG. 18B

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